REMARKS

I. Introduction

In response to the Office Action, Applicants have amended claims 4 and 10 in order to further clarify the subject matter of the present invention. No new matter has been added.

Applicants note that claims 1-3, 7-9 and 13-15 had been previously cancelled in the Divisional Transmittal filed June 25, 2003. Accordingly, the status of the above cited claims are indicated as cancelled in this Amendment, as they are the subject of U.S. Patent No. 6,603,316.

For the reasons set forth below, Applicants respectfully submit that all pending claims are in condition for allowance.

II. The Rejection Of Claims 4-6 And 10-12 Under 35 U.S.C. § 102

Claims 4-6 and 10-12 were rejected under 35 U.S.C. § 102(b) as being anticipated by Smayling et al. (USP No. 5,798,649). Applicants respectfully submit that Smayling et al. fails to anticipate the pending claims for at least the following reasons.

With regard to the present invention, claim 4 recites a method for carrying out a burn-in test on a great number of semiconductor devices...wherein the method comprises the step of exposing the wafer to an electromagnetic wave as an alternating current wave so as to place an electric field with a predetermined intensity on the gate oxide film of each said device on the wafer, thereby carrying out the burn-in test on the devices.

Similarly, claim 10 recites that the method comprises the step of exposing the wafer to an electric field as an alternating current wave, thereby setting the electric field placed on the gate

oxide film of each said device on the wafer to a predetermined intensity, so as to carry out the burn-in test on the devices.

Thus, the key feature of the present invention resides in that the burn-in test carried out on the semiconductor wafer is a ***non-contact*** test. As recited by each independent claim, the voltage is applied to the gate electrode of each device by exposing the wafer to an electromagnetic wave.

In contrast to the present invention, Smayling discloses a ***contact*** test method in which a constant voltage is applied between electrodes sandwiching a gate oxide film (see, Fig. 3 of Smayling). In applying the constant voltage therebetween, Smayling provides a method for detecting a broken gate oxide film by measuring l/f noise, not for carrying out a burn-in test like that of the present invention. Accordingly, Smayling does not teach the step of exposing the wafer to an electromagnetic wave or electric field as an alternating current wave so as to place an electric field with a predetermined intensity on the gate oxide film of each said device on the wafer, thereby carrying out the burn-in test on the devices.

Furthermore, the Examiner alleges that while Smayling does not explicity state an electromagnetic wave generating means nor an electric field, the embodiments use both direct and alternating current and therefore, the currents produce moving charges that produce an electromagnetic field and an electric field.

However, the alternating current disclosed in Smayling means an alternating current wave given to the device contiguously. Thus, even if the alternating current secondarily generates an electromagnetic wave, this electromagnetic wave is not strong enough to cause

stress to the device, thus, the device cannot be tested by using this electromagnetic wave. Accordingly, Smayling cannot conduct the burn-in test by this method.

As anticipation under 35 U.S.C. § 102 requires that each element of the claim in issue be found, either expressly described or under principles of inherency, in a single prior art reference, *Kalman v. Kimberly-Clark Corp.*, 713 F.2d 760, 218 USPQ 781 (Fed. Cir. 1983), and at a minimum, Smayling does not disclose the step of exposing the wafer to an electromagnetic wave or electric field as an alternating current wave so as to place an electric field with a predetermined intensity on the gate oxide film of each said device on the wafer, thereby carrying out the burn-in test on the devices, it is clear that Smayling does not anticipate claims 4 or 10, or any claim dependent thereon.

III. The Rejection Of Claim 16 Under U.S.C. § 103

Claim 16 was rejected under 35 U.S.C. § 103(b) as being unpatentable over Smayling et al. (U.S. 5,798,649) in further view of Smith, Jr. et al. (USP No. 6,192,826). Applicants respectfully traverse the rejections over the claim 16 for at least the following reasons.

With regard to the present invention, claim 16 recites a method for carrying out a burn-in test on a great number of semiconductor devices that have been formed on a semiconductor wafer...the method comprising the steps of: exposing the wafer to an electric field that has been generated as a direct current wave from a conductive plate; and loading and unloading the wafer into/from a space, where the electric field generated from the conductive plate exists, to expose the wafer to the electric field intermittently, whereby the wafer is exposed to an alternating-current electric field to carry out the burn-in test on the devices.

As mentioned above, Smayling discloses a contact test method in which a constant voltage is applied between electrodes sandwiching a gate oxide film. As claim 16 of the present invention teaches the step of exposing the wafer to an electric field that has been generated as a direct current wave from a conductive plate, which is a non-contact method of carrying out a burn-in test on the devices, Smayling also fails to anticipate this step of claim 16.

In order to establish *prima facie* obviousness of a claimed invention, all the claim limitations must be taught or suggested by the prior art. *In re Royka*, 180 USPQ 580 (CCPA1974). As Smayling fails to teach or suggest a method for carrying out a burn-in test on a great number of semiconductor devices that have been formed on a semiconductor wafer...the method comprising the steps of: exposing the wafer to an electric field that has been generated as a direct current wave from a conductive plate; and loading and unloading the wafer into/from a space, where the electric field generated from the conductive plate exists, to expose the wafer to the electric field intermittently, whereby the wafer is exposed to an alternating-current electric field to carry out the burn-in test on the devices, then based on the foregoing, it is submitted that Smayling does not render claim 16 obvious.

IV. All Dependent Claims Are Allowable Because The Independent Claim From Which They Depend Is Allowable

Under Federal Circuit guidelines, a dependent claim is nonobvious if the independent claim upon which it depends is allowable because all the limitations of the independent claim are contained in the dependent claims, *Hartness International Inc. v. Simplimatic Engineering Co.*, 819 F.2d at 1100, 1108 (Fed. Cir. 1987). Accordingly, as claims 4, 10 and 16 are patentable for the reasons set forth above, it is respectfully submitted that all pending dependent claims are also in condition for allowance.

V. Conclusion

Having fully responded to all matters raised in the Office Action, Applicants submit that all claims are in condition for allowance, an indication of which is respectfully solicited.

To the extent necessary, a petition for an extension of time under 37 C.F.R. 1.136 is hereby made. Please charge any shortage in fees due in connection with the filing of this paper, including extension of time fees, to Deposit Account 500417 and please credit any excess fees to such deposit account.

Respectfully submitted,

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